"Lily Pond Lane"

(A bit of Long Island Ecology)

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On the North Fork, near the end of Long Island there is a sandy lane leading to the sea. The approach is through the oak woods. Among the oaks are a few graceful birches and an occasional beech; and here and there are scattered some big lichen covered rocks, that rolled over from Connecticut in the glacial ice, our very first "*settlers*" from that state.

As one descends to within a few feet of the sea level, and approximately within 500 feet of the sea itself, the whole character of the vegetation changes. There are no trees but various bushes and shrubs and plants growing at the tension lines, this is due to the character of the soil, which becomes more and more sandy, and to the strong sea winds.

A little path to the left leads to a fresh water pond now fed by springs. It is not at all brakish although it was originally part of a great cut off from the sea which occurred hundreds of years ago. Possibly it was a small glacial kettle still earlier, as the few rounded rocks on the steep slope of the south side of the pond would seem to indicate There is a series of such ponds along our shore—and some of them are true glacial kettles;—Fuller in the U. S. Geol. Survey (p. 177)—accounts for such great stretches of sand forming cut offs as follows.

"Currents sweeping along any stretch of coast tend to move in straight or gently curving lines just outside of the headlands, rather than in lines conforming to the minor irregularities and indentations of the shore. The material they transport is deposited owing to the slacking of their progress when the deeper water is reached, forming bars—more or less completely connecting the headlands, and at many points *enclosing areas of relatively deep water*. The beach between Hortons point, and Duck Pond Point, was formed in this way and a second bar is in process of formation"—This precisely accounts for our Lily Pond.

Here in the early spring the air is spicy from millions of plum blossoms. (*Prunus Maritima*). There are no leaves so early in the season, so there is only the white flower of Prunus, the yellow sand and the deep blue of the sea. Later there is shad bush (*Amelanchier intermedia*) and in turn creamy spikes of clethra,

white balls of cephalanthus, high bush blueberry, (*Vaccinium corymbosum*), the fragrant swamp honeysuckle, (*Azalia viscosa*). Candleberry bay (*Myrica Carolinensis*). "Sweet fern" or "sweet gale" (*M. asplenifolia* or *Comptonia peregrina*).

In late May or early June, in certain rather dry sandy places and under the tall bushes is a colony of the tall stemmed pink lady slipper (*Fissepes acaulis*).

Later in the summer, orange and lavendar milkweed (*Asclepias intermedia* and *Asclepias tuberosa*) and several varieties of Solidago peep out from the tangle that the catbrier (*Smilax glauca*) makes in the low bushes. Here also climbs a lovely perennial lathyrus that should be *Lathyrus latifolius*, and it probably is, but the blossoms are always a bright deep pink (not at all purple) and the leaf has four leaflets,—the vine is an unusually pretty green and has very wide winged stems and long branching tendrils. It thrives in my garden and in the richer soil often grows to a length of three yards. It seems worth of some attention from the horticulturists.

In the dry sand among the bay bushes there is a little association of the delicate polygala, *Polygala viridescens* and an occasional spiral of the fragrant little orchid, *Ibidium Beckii*.

Great clumps of *Osmuda regalis* grow in the shallow water at the east end of the pond. One must go early in the season to watch the royal leaves unfurl and to see each leaflet mirrored in the still water. Here in August among these ferns is the "pink-purple" loostrife (*Decodon verticillatus*), Tennyson's "willow herb,"—this plant forms a curious cork-parenchyma-like substance at the base of the submerged stems.

From the rich muck at the bottom of the pond, the long stemmed, purple lined leaves and fragrant lilies of *Castalia odorata* rise to the surface of the water and spread out their shining waxy-green leaf surface to cover almost two thirds of the pond. Thousands of creamy lilies lift their faces to the sun; and as the sun's rays visit them they seem to absorb the light, until it shines again from their golden hearts. Castalia has even invaded the occasionally submerged beach. Sometimes one may gather it dry shod.

Far back on the south side of the little lake is a high bank with rocks and trees—on the north side nearer the sea is a low, gently sloping beach of coarse wet sand, frequently submerged. Here is the only station for Sphagnum in this immediate locality.

Fixed in the sphagnum is a wonderful colony of the spatulate leaved sun dew (*Drosera intermedia*) In May and June it fairly carpets the wet sand and each ruby tentacle is covered with a diamond drop that sparkles in the light of the morning sun. Later in the day they are not so beautiful or active as the heat seems to absorb somewhat the moisture accumulated during the night. In the late afternoon and evening they are again more active. In July their delicate white flowers begin to open, adding pearls to the plant's jeweled coronal. In August the seeds mature. The vernation of the flower stalk is entirely circinate, that of the leaves not so perfectly so. This Drosera often reproduces a new plant from a leaf of the old. Early in the season at the time of the maximum growth, when there is plenty of moisture, they are often quite tall $2\frac{1}{2}$ to $3\frac{1}{2}$ inches—the petioles 2 to 3 inches long. The pulvinus is very active at times in lifting and lowering the leaves; much more so than in any *Drosera rotundifolia* I have ever seen. The glandular hairs are 4–5 mm. the leaves themselves half an inch in length and quite broad above the centre of the leaf.

Only in two places have I found the Drosera, both on the north beach of two adjacent ponds—growing under practically the same conditions, i.e. in the wet, frequently submerged coarse sand in or near the Sphagnum and sheltered by the bushes on the north. Unless so protected the two colonies would be buried deep in the dry sand, brought in, in winter, by the strong winds from the sea. This sand now piles up in small dunes beyond the bushes.

How did this isolated form come here? Is it endemic—a relic left by the reduction of the area of a favorable habitat when the two adjacent ponds were originally part of one vast cut off from the sea? And when *Drosera intermedia* grew along the entire north shore of this cut off? At all events the actual localization seems the result of a reduction of the generic area and a narrowing of the specific area, now the only refuge in the immediate vicinity where these highly organized moisture loving plants can grow. Although the coarse sand would seem far from an ideal soil, it retains the moisture better at times when the beach is not submerged. Noting Drosera's delicacy and beauty, it is difficult to realize its insect catching activities. In June I observed hundreds of these plants. Some were working together; and often as many as five or six leaves of the same plant pragmatically

engaged in forming a cage to hold prey larger than a single leaf could hold. Often there are several plants engaged, two or more leaves from different plants forming a cage around a single entrapped insect. This I have seen repeated in the laboratory when a small piece of chicken liver was placed on one leaf.

The most important thing to these insectiverous plants is that they should be in the best position for catching insects.

Drosera intermedia—several leaves holding one insect—leaves from two plants with one insect.

Here the small flying and crawling insects are plentiful. From many observations I do not think that the plant waits for the insect to alight on the leaf, and merely responds by a touch-reaction, but I believe that it makes quite elaborate preparations in advance, and it behaves as though it *enjoyed* the sport, —Spreading the broad surface of the leaves out side by side and with interlacing tentacles, turning the outer glandular hairs down—and the upper ones up, so obtaining a maximum surface.

In the dusk the tiny insects fly about and are even caught on the wing. When the flying insects are scarce, the pulvinus actively lowers most of the leaves except the very young ones so that they lie almost flat on the ground and are so enabled to catch the little crawlers.

I know whereof I speak, because in '24 being temporarily lame as the result of an accident there were no more long tramps through woods fields and marshes for me. So I became the disciple of the lame Epictitus and spent philosophically and happily most of the pleasant spring and summer days on the sand in the sunshine, re-reading Darwin's "Insectiverous plants" and watching this particular colony of Drosera, the clouds and sea—and *all* the lovely growing things around me. There is no other spot near by where so many amusing things grow in so confined an area. After carefully noting Darwin's experiments —and repeating some of them, it seemed to me that leaves—cut from the plant or glued—could hardly react naturally. That is why I determined to watch the natural reactions of Drosera. This highly organized protein-loving little plant seems so much nearer to Homo-Sapiens then most of the insectivorae, that as I watched I marveled, for it seems to hold the very secret of life and our relation to the vegetable kingdom. Even one tiny cell may hold this hidden riddle of the world!

In studying this *Tapis Vegetal* I have carefully noted all the interesting species that grow in the tufts of Sphagnum, and some of these seem to indicate a primitive character of the vegetation.

Among the Drosera—just beyond them from June 10th to July 20—flowers the lovely Orchid (*Pogonia ophioglossoides*). The fragrant rose and white pogonia.

In the early spring, the long leaved red stemmed white violets (*Viola lanceolata*) are there also. Even Xyris (*Xyris flexuosa*) itself thrives in the moist sand, and sundry primative lycopods, *Lycopodium alopecuroides* notably, crawl out from clumps of growth, like great green worms from among the mosses and sun dews.

A tiny hypericum seems to live in peace with its taller relative (*Hypericum canadense*).

The graceful, long stemmed marsh fern (*Dryopteris tholypteris*) proudly lifts its feathery foliage high above these lowly

marsh plants, this and various sedges—the round stemmed monotypic sedge *Dulicium arundinaceum* and the lovely *Cyperius paniculatus* and a white *Luzula* (*albida*) grow up to the tension line, where the roses riot in the drier sand.

Later in the season the Melastomaceae is represented by a colony of the square stemmed Rhexia—(*Rhexia virginica*). This is the only plant of the family that ever ventures so far north. In late July and August this "meadow gift" makes this corner of the world gorgeous, flaunting royal purple petals surmounted by a showy crown of golden stamens.

The red and russet leaves, the goldenrods and asters, keep the autumn glorious and when winter comes the sedges are still lovely. When the plums have lost their leaves the sea seems nearer. The myrica branches and twigs are laden with fragrant waxy berries. The cephalanthus with swaying coppery balls, and the perfect tiny seed urns of Rhexia, rise above the water of the submerged beach where Drosera and the other marsh plants are no longer seen.

Apologia.—New York City is creeping down Long Island ten miles a year. Even *our* countryside is being "developed," our quiet woods in many places are now full of summer bungalows—here and there is a velvet, lawn-trimmed estate of a multi-millionaire,—where there are no houses as yet, there are signs nailed to the trees, "This Land for Sale by such and such Realty Company."

"Lily Pond" has a sign but it still reads "Private Property, no trespassing." The realtor is there also. I have seen him with note book and pencil figuring the value of beauty in dollars and cents and his engineers surveying the land to the water's edge. At best it cannot be long before this favored spot is invaded by the oncoming hosts.

Long Island is still of interest to the field worker and there are many species now on the island which wll tend to disappear which should be put on record.